Unit 1: Systems of Linear Equations ~ Summary

1. Graphing a Line
   a) Slope-intercept
   Rearrange equation to solve for y: $y = mx + b$.
   Plot the y-intercept (b).
   Use the slope two ways to give you directions from the y-intercept to your other points
   slope (m) = $\frac{rise}{run}$. $\frac{y_2 - y_1}{x_2 - x_1}$

   b) Intercepts $c = ax + by$
   X-intercept: set y = 0 and solve for x.
   Y-intercept: set x = 0 and solve for y.
   Use this method mainly if y-intercept is a decimal or fraction.

2. Modelling Linear Systems
   Clearly define 2 variables, including units: "Let __ represent..."
   Write 2 *different* equations using only the 2 variables you defined.

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3. Solve by Graphing
   - graph both lines
   - read/state the POI off the graph (the coordinates of the point where the two lines intersect)
   - remember to label lines with original equations

4. Solve by Substitution
   - look for a variable with a coefficient of 1 or -1
   - solve for that variable in that particular equation
   - substitute into the OTHER equation
   - state the POI

   verify

5. Solving by Elimination
   - rearrange each equation into Ax + By = C form
   - line the equations up vertically
   - eliminate one of the variables by adding or subtracting the 2 equations
   - if one pair of the variables does not have the same coefficient, you will have to multiply one or both of the equations to get the coefficients the same before you can add or subtract
   - **BE CAREFUL WHEN SUBTRACTING A NEGATIVE**
   - state the POI

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Ch 1

p.62 and 63

q.1-8, 12-14, 16

Ch 2

p.124 and 125

q.1,2,4,7, 8, 13,14, 23

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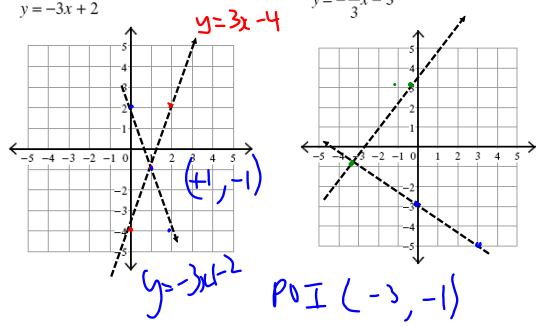
Solving Systems of Equations by Graphing

Solve each system by graphing.

1) $y = 3x - 4$
$y = -3x + 2$

2) $y = \frac{4}{3}x + 3$
$y = -\frac{2}{3}x - 3$



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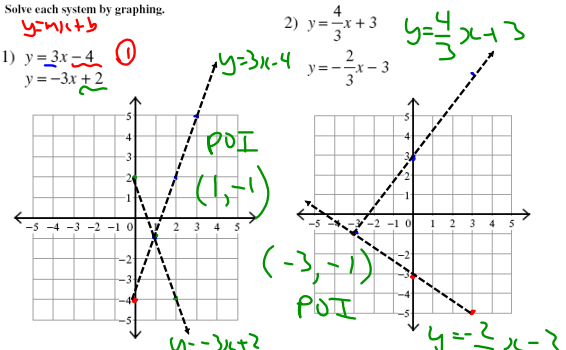

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Solving Systems of Equations by Substitution

Solve each system by substitution.

1) $y = 6x - 11$
$-2x - 3y = -7$

2) $-3x - 8y = 20$
$-5x + y = 19$

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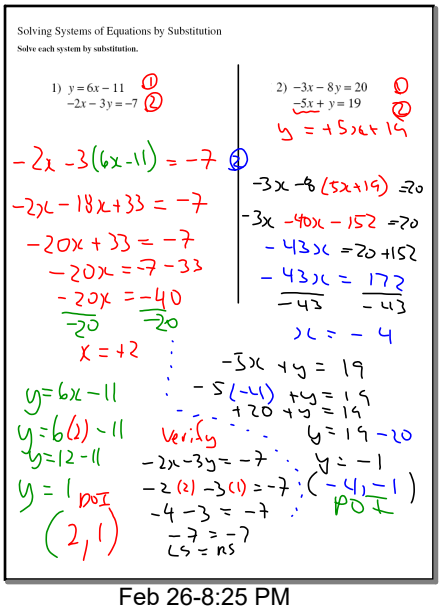

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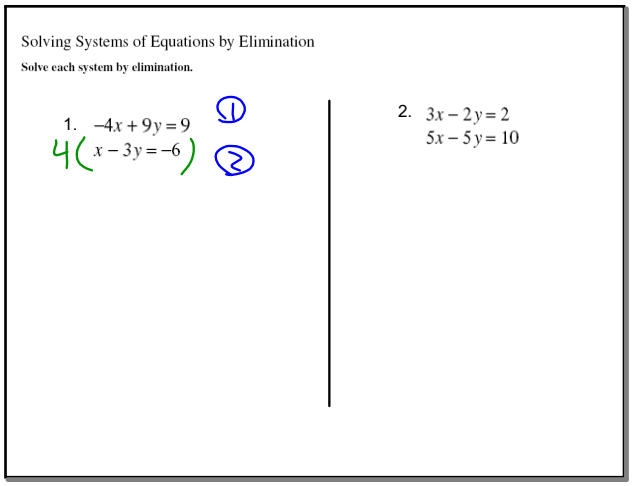

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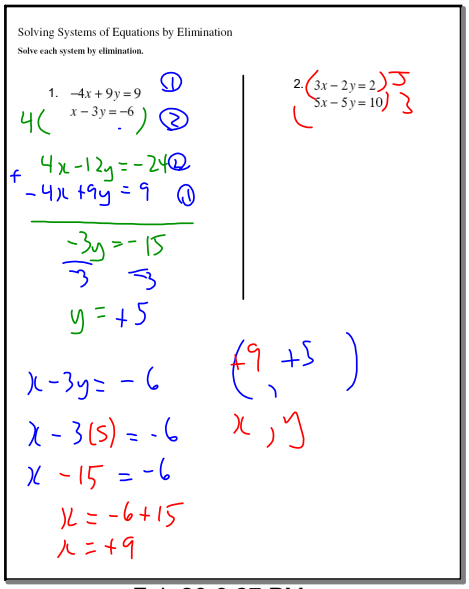

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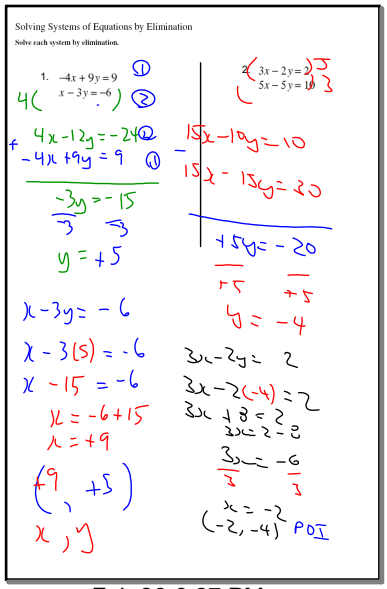

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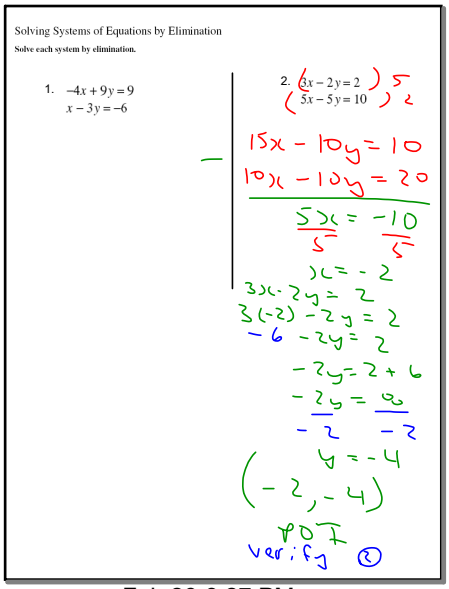

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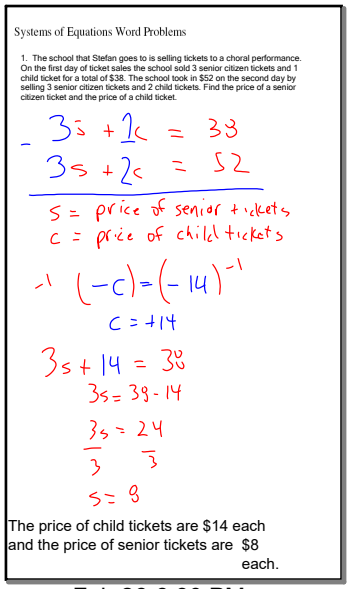

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Systems of Equations Word Problems

1. The school that Stefan goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 3 senior citizen tickets and 1 child ticket for a total of $38. The school took in $52 on the second day by selling 3 senior citizen tickets and 2 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

$3s + 1c = 38$

$3s + 2c = 52$

$-1c = -14$

$c = 14$

s = price of a senior citizen ticket

c = price of a child's ticket

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2. Matt and Ming are selling fruit for a school fundraiser. Customers can buy small boxes of oranges and large boxes of oranges. Matt sold 3 small boxes of oranges and 14 large boxes of oranges for a total of $203. Ming sold 11 small boxes of oranges and 11 large boxes of oranges for a total of $220. Find the cost each of one small box of oranges and one large box of oranges.

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$3s + 14l = 203$

$11s + 11l = 220$

$11l = 220 - 11s$

$\frac{11l}{11} = \frac{220}{11} - \frac{11s}{11}$

$l = 20 - s$

s = price of small boxes

l = price of large boxes

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